METROLOGIC INSTRUMENTS, INC.

MS9524/44 Voyager*PDF*® Series Single-Line Hand Held Laser Scanner Installation and User's Guide

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INTRODUCTION

Metrologic's Voyager*PDF* series is a group of single-line, hand-held, laser bar code scanners that have the ability to decode 2D codes such as PDF417, PDF417 truncated, micro PDF, macro PDF and RSS-14 composite bar code symbologies.

Some additional key product features include:

- Auto trigger operation and Auto stand detect
- CodeGate data transmission technology (MS9544 only)
- Flash - Upgradeable Firmware
- 180 scans per second
- PowerLink Compatible
- Easy programming with Windows® software or bar codes
- OPOS and JPOS system compatibility
- Support for common interfaces including USB

There are two models available, the MS9524 and the MS9544 with CodeGate®. The MS9524 is packed with all of the same features as the MS9544, with the exception of CodeGate.

The MS9544 includes Metrologic's patented auto trigger and CodeGate button feature. When a bar code is place in the scanner's IR range the auto trigger activates the laser allowing the user to easily align the visible laser line over the bar code selected for scanning. Then just press the CodeGate button and the data is transmitted to the host system. Since scanning PDF codes requires multiple scans, a separate programmable CodeGate feature has been added. With PDF CodeGate disabled, PDF codes can be decoded and transmitted automatically without compromising the versatility achieved with CodeGate. An in-stand/out-of-stand sensor automatically de-activates CodeGate when the scanner is placed in the stand.

VOYAGER*PDF*	VOYAGER*PDF* WITH CODEGATE	INTERFACE
MS9524 – 00	MS9544 – 00	Laser Emulation*, RS232 Transmit/Receive*
MS9524 – 9	MS9544 – 9	OCIA*
MS9524 – 11	MS9544 – 11	IBM 468X/469X*, RS232-TXD, RXD, RTS, CTS
MS9524 – 14	MS9544 – 14	RS232 - TXD, RXD, RTS, CTS, DTR, DSR
MS9524 – 38	MS9544 – 38	Low Speed USB, HID
MS9524 – 39	MS9544 – 39	Low Speed USB, POS
MS9524 – 40	MS9544 – 40	Full-speed USB
MS9524 – 41	MS9544 – 41	RS-232 / Light Pen Emulation*
MS9524 – 47	MS9544 – 47	Keyboard Wedge, Stand-Alone Keyboard and RS232 Transmit/Receive

* PDF bar codes are transmitted as Code 39 for these interfaces. Acceptance on host side is dependant on host's ability to handle large amounts of data.

SCANNER AND ACCESSORIES

BASIC KIT	
Part #	**Description**
MS9524 or MS9544	Voyager*PDF* Series Scanner
00-02544	MetroSelect® Single-Line Configuration Guide*
00-02989	MS9524/44 Voyager*PDF* Series Installation and User's Guide*

** Available on the Metrologic website - www.metrologic.com*

OPTIONAL ACCESSORIES	
Part #	**Description**
AC to DC Power Transformer- Regulated 5.2VDC @ 650 mA output.	
45-45593	120V United States
45-45591	220V-240V Continental European
45-45592	220V-240V United Kingdom
46-46803	220V-240V Australia
46-46931	220V-240V China
54-54xxx-3	PowerLink Cable with built in power jack 2.1m (7') *straight* cord, short strain relief, black
53-53xxx-3	PowerLink Cable with built in power jack 2.7m (9') *coiled* cord, long strain relief, black
xxx specifies connection to the host.	
53-53002-3	Keyboard Wedge PowerLink Cable with Adapter Cable
53-53020-3	Stand Alone Keyboard Wedge PowerLink Cable

Other items may be ordered for the specific protocol being used. To order additional items, contact the dealer, distributor or call Metrologic's Customer Service Department at 1-800-ID-METRO or 1-800-436-3876.

SCANNER AND ACCESSORIES

OPTIONAL ACCESSORIES	
Part #	**Description**
53-53213	USB Power/Communication Cable, 3 m (10') coiled cord, long strain relief, gray
53-53214	USB Power/Communication Cable, 5 m (17') coiled cord, long strain relief, gray
MVC**	Metrologic Voltage Converter Cable ±12VDC to +5.2VDC
** *Contact a Metrologic customer service representative for additional information on the MVC converter cable series and the host connections available.*	
46-46128	Free-Standing Stand with Accessories
46-46351	Hard Mount Accessory Kit (*used with kit #46-46128)*
46-46433 OR 46-46508	Wall Mount Hanger Accessory Kit

Other items may be ordered for the specific protocol being used. To order additional items, contact the dealer, distributor or call Metrologic's Customer Service Department at 1-800-ID-METRO or 1-800-436-3876.

OPERATIONAL TEST

1. Connect the 10-pin RJ45 male connector into the jack on the Voyager*PDF*. You will hear a 'click' when the connection is made.

2. Connect the L-shaped plug of the power supply into the power jack on the PowerLink cable.

3. Connect the power supply into an AC outlet. Make sure the AC input requirements of the power supply match the AC outlet.

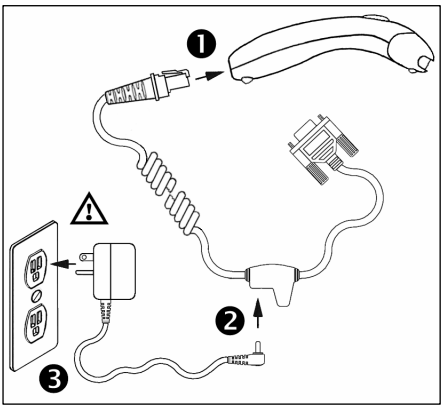


Figure 1.

4. When the Voyager*PDF* is ready to scan, the blue LED will turn on, the white LED will flash and the scanner will beep once.

Figure 2.

5. Place a bar code in front of the scanning window. The scanner will beep once and flash the white LED if the bar code was successfully decoded and transmitted (*default mode only*).
For the MS9544, press the CodeGate® button to transmit the data (see page 10).

Figure 3.

Voyager*PDF* is shipped from the factory preconfigured with default settings. Refer to the MetroSelect Single-Line Configuration Guide or MetroSet®*2*'s help files for instructions on how to configure the scanner.

Caution:
To maintain compliance with applicable standards, all circuits connected to the scanner must meet the requirements for SELV (Safety Extra Low Voltage) according to EN/IEC 60950.

To maintain compliance with standard CSA-C22.2 No. 60950-00/UL 60950 and EN/IEC 60950, the power source should meet applicable performance requirements for a limited power source.

RS232, IBM, OCIA, Laser Emulation, and Light Pen (MS95x4-00/9/11/14/41)

1. Turn off the host system.
2. Connect the 10-pin RJ45 male connector into the jack on the Voyager*PDF*. You will hear a 'click' when the connection is made.
3. Connect the L-shaped plug of the power supply into the power jack on the PowerLink cable.
4. Make sure the AC input requirements of the power supply match the AC outlet. Connect the power supply into an AC outlet. The outlet should be near the equipment and easily accessible.
5. Connect the PowerLink cable to the proper port on the host system.
6. Turn on the host system.

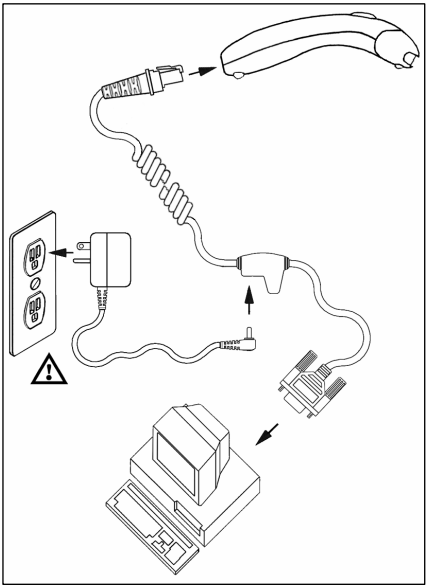


Figure 4.

Plugging the scanner into a port on the host system does not guarantee that scanned information will be communicated properly to the host system. The scanner is shipped from the factory preconfigured with default settings. Please refer to the MetroSelect Single-Line Configuration Guide (MLPN 00-02544) or MetroSet2's help files for instructions on changing the scanner's configuration. In addition, please check that the scanner and host system are using the same communication protocol.

Caution:
To maintain compliance with applicable standards, all circuits connected to the scanner must meet the requirements for SELV (Safety Extra Low Voltage) according to EN/IEC 60950.

To maintain compliance with standard CSA-C22.2 No. 60950-00/UL 60950 and norm EN/IEC 60950, the power source should meet applicable performance requirements for a limited power source.

Keyboard Wedge (MS95x4-47)

1. Turn off the PC.
2. Connect the 10-pin RJ45 male connector into the jack on the Voyager*PDF*. You will hear a 'click' when the connection is made.
3. Connect the L-shaped plug of the power supply into the power jack on the PowerLink cable.
4. Make sure the AC input requirements of the power supply match the AC outlet. Connect the power supply into an AC outlet. The outlet should be near the equipment and easily accessible.
5. Disconnect the keyboard from the PC.
6. The PowerLink cable is terminated with a 5-pin DIN female connector on one end and a 6-pin mini DIN male on the other. Metrologic will supply an adapter cable with a 5-pin DIN male connector on one end and a 6-pin mini DIN female connector on the other. According to the termination required, connect the appropriate end of the adapter cable to the PowerLink cable, leaving the necessary termination exposed for connecting to the keyboard and the keyboard port on the PC.
7. Connect to the PowerLink cable to the keyboard and the keyboard port on the PC.
8. Power up the PC.

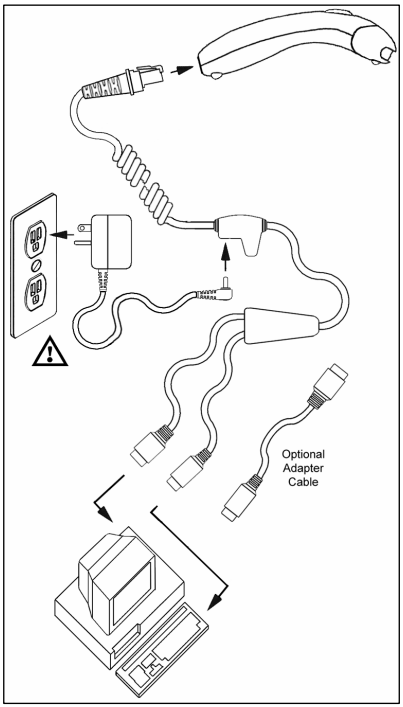


Figure 5.

Caution:
To maintain compliance with applicable standards, all circuits connected to the scanner must meet the requirements for SELV (Safety Extra Low Voltage) according to EN/IEC 60950.

To maintain compliance with standard CSA-C22.2 No. 60950-00/UL 60950 and norm EN/IEC 60950, the power source should meet applicable performance requirements for a limited power source.

Stand Alone Keyboard (MS95x4-47)

1. Turn off the host system.
2. Connect the 10-pin RJ45 male connector into the jack on the Voyager*PDF*. You will hear a 'click' when the connection is made.
3. Connect the L-shaped plug of the power supply into the power jack on the PowerLink cable.
4. Make sure the AC input requirements of the power supply match the AC outlet. Connect the power supply into an AC outlet. The outlet should be near the equipment and easily accessible.
5. Connect the PowerLink cable to the keyboard port on the host system.
6. Turn on the host system.

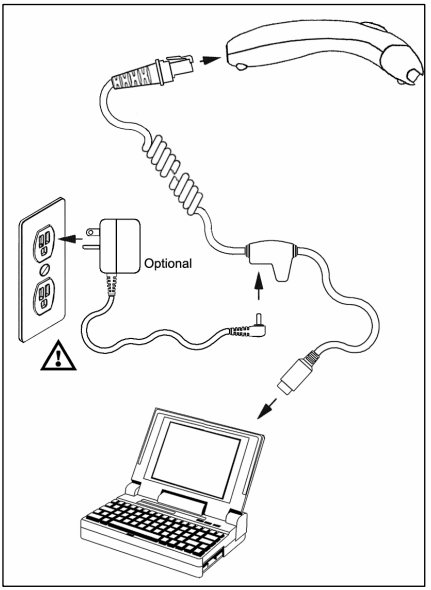


Figure 6.

Caution:
To maintain compliance with applicable standards, all circuits connected to the scanner must meet the requirements for SELV (Safety Extra Low Voltage) according to EN/IEC 60950.

To maintain compliance with standard CSA-C22.2 No. 60950-00/UL 60950 and norm EN/IEC 60950, the power source should meet applicable performance requirements for a limited power source.

Integrated USB: Full Speed (MS95x4-40)
Low Speed POS (MS95x4-39)
Low Speed HID (MS95x4-38)

1. Turn off the host system.
2. Connect the 10-pin RJ45 male connector of the USB cable into the jack on the Voyager*PDF*. You will hear a 'click' when the connection is made.
3. Connect the other end of the USB cable to the host USB port.
4. Turn on the host system.

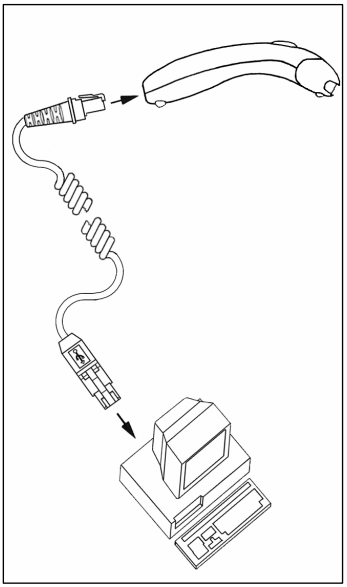


Figure 7.

Plugging the scanner into a port on the host system does not guarantee that scanned information will be communicated properly to the host system. The scanner is shipped from the factory preconfigured with default settings. Please refer to the MetroSelect Single-Line Configuration Guide (MLPN 00-02544) or MetroSet2's help files for instructions on changing the scanner's configuration. In addition, please check that the scanner and host system are using the same communication protocol.

Caution:
To maintain compliance with applicable standards, all circuits connected to the scanner must meet the requirements for SELV (Safety Extra Low Voltage) according to EN/IEC 60950.

To maintain compliance with standard CSA-C22.2 No. 60950-00/UL 60950 and norm EN/IEC 60950, the power source should meet applicable performance requirements for a limited power source.

DISCONNECTING THE POWERLINK CABLE

Before removing the cable from the scanner, Metrologic recommends that the power on the host system is off and the power supply has been disconnected from the PowerLink cable.

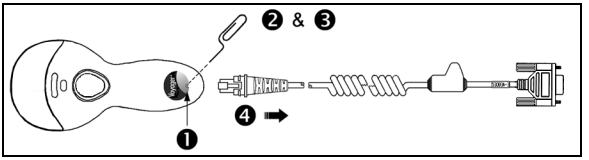


Figure 8.

1. Locate the small ‘pin-hole’ on the top of the unit near the bottom of the Voyager logo.
2. Bend an ordinary paperclip into the shape shown above.
3. Insert the paperclip (or other small metallic pin) into the small ‘pin-hole’.
4. You will here a faint ‘click’. Pull gently on the strain-relief of the PowerLink cable and it will slide out of the scanner.

CONNECTING THE POWERLINK CABLE

Important: If the PowerLink cable is not fully 'latched' the unit can power intermittently.

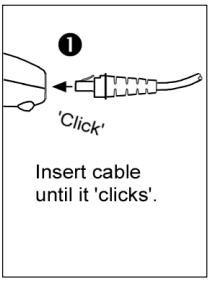


Figure 9a.

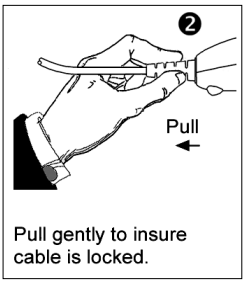
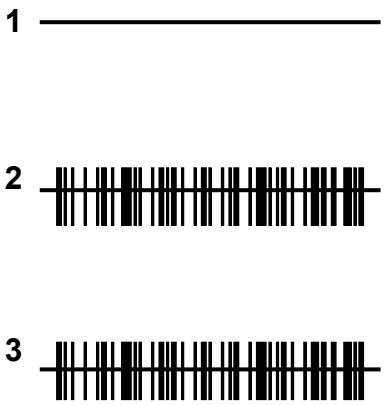


Figure 9b.

How to Use CodeGate – MS9544



- Auto trigger activates the laser
- Place the laser line on the bar code
- Press the CodeGate button to transmit the data

Figure 10.

Two Modes of Operation

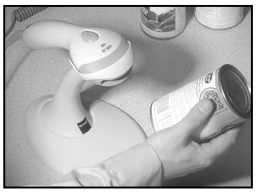


Figure 11.

- Auto-triggers while in the stand
- Bar code is automatically decoded and transmitted

Figure 12.

- CodeGate activates when removed from the stand
- Bar code data is transmitted when the CodeGate button is pressed

HOW TO SCAN PDF BAR CODES

Operator Note: PDF-CodeGate is disabled (by default) in all MS9544 Voyager*PDF* units.

Figure 13.

1. The auto trigger activates the laser when the bar code is placed in the scanner's IR range.

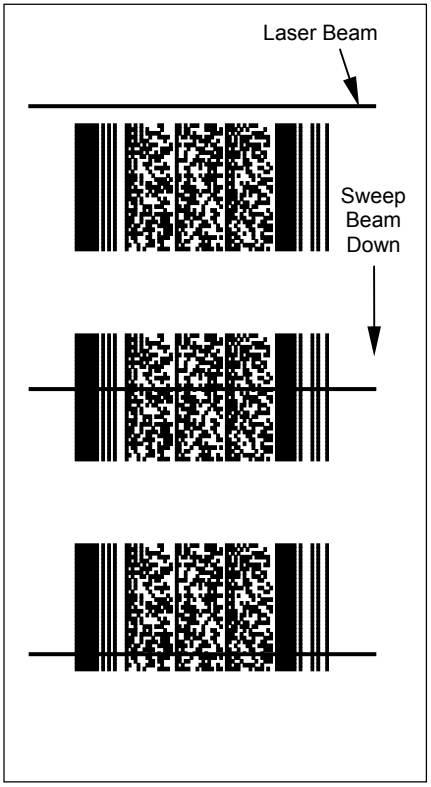


Figure 14.

2. Position the laser line at the top of the code then sweep the beam over and down to the base of the code. If needed, re-sweep the entire code, up and down. As segments of the code are scanned, an audible indicator will sound (default).

   Operator Note:

   Best scanning results are accomplished with a uniform sweep speed.

3. Once the entire code has been scanned and decoded, the data is transmitted to the host. Transmission is accompanied by the white LED flashing and the beep sounding.

Free Standing Kits #46-46128

a. Stand (*MLPN 36-00454)*.....Qty 1
b. Apron (*MLPN 50-50440*).....Qty 1
c. Screw, M3 x 6 mm (*MLPN 18-18670*).....Qty 2
d. Washer, #5 x .5 OD (*MLPN 18-18671)* .....Qty 2
e. Stand Anchor (*MLPN 50-50449)* .....Qty 1
f. M3 x 20 mm Set Screw (*MLPN 18-18672*).Qty 1

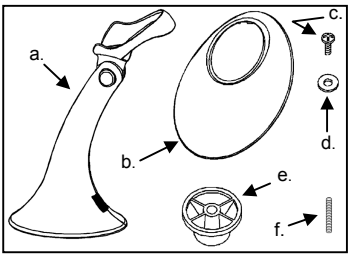


Figure 15.

Optional Hard Mount Accessory Kit #46-46351

This kit, used in conjunction with the stand kit (#46-46128), can be used to bolt/hard mount the MS9500 to the countertop.

a. Screw, #8 Round Head (*MLPN 18-18057*) ..... Qty 4
b. Base (*MLPN 36-36080*) ..... Qty 1

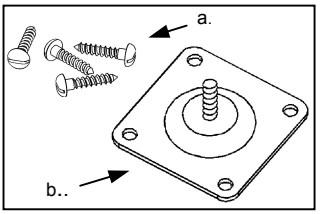


Figure 16.

Optional Wall Mount Hanger Accessory Kit #46-46433

a. Screw #8 Round Head (*MLPN 18-18057*) Qty.2
b. Wall Mount Hanger (*MLPN 18-18057)*..... Qty.1

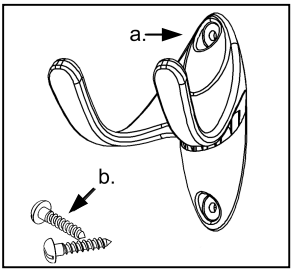


Figure 17.

Optional Wall Mount Hanger Kit #46-46508

a. Wall Mount Hanger *(MLPN 36-00611)*..... Qty. 1
b. Wall Mount Base *(MLPN 36-00812)* ..... Qty. 1
c. 4.8 x 13 mm, Self Tapping Screw ..... Qty. 2
(MLPN 18-18233)
d. Double-Sided Adhesive Tape ..... Qty. 1
(MLPN 36-00821)
e. #8 Wood Screw *(MLPN 18-18057)* ..... Qty. 2

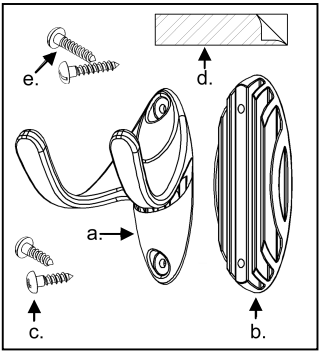


Figure 18.

ASSEMBLING THE STANDS

There are 2 options for assembling the stand. The first option allows the stand to be self-supporting and moved freely or placed anywhere on the countertop. The second option is used if the stand will be bolted/hard-mounted to the countertop.

Stand Option 1: Self-supported
For use with kit #46-46128

Step 1

Slide the apron (*MLPN 50-50440*) over the stand (*MLPN 36-00454*).

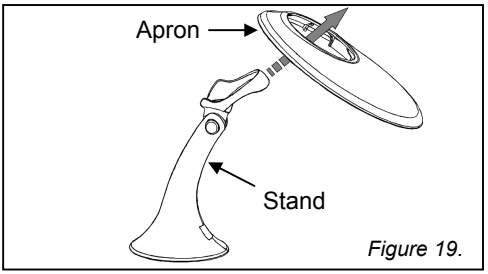


Figure 19.

Step 2

Position the stand so it sits under the tab on the apron. Then secure the apron to the stand using the M3 x 6 mm screws (*MLPN 18-18670*) and the #5 washers (*MLPN 18-18671*) provided.

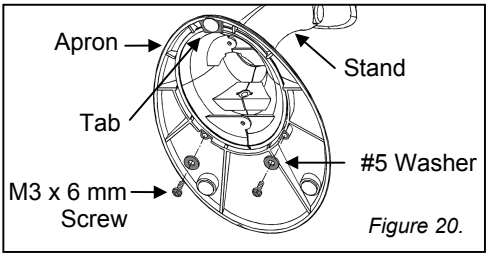


Figure 20.

Stand Option 2: Hard-mounted to countertop
For use with kit #46-46351

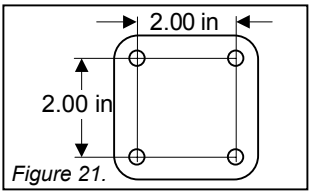


Figure 21.

Step 1

Drill four #39 holes in the countertop.

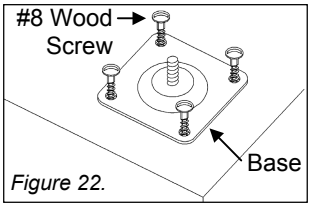


Figure 22.

Step 2

Secure the base *(MLPN 36-36080)* to the countertop with the four #8 wood screws *(MLPN 18-18057)* provided.

Continued on next page.

Stand Option 2: Hard-mounted to countertop (*continued*)
For use with kits #46-46128, #46-46351 and MS951 Stand Replacements

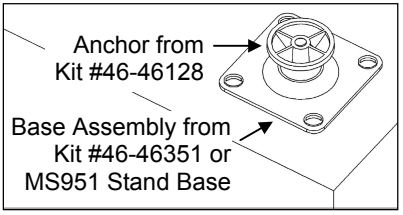


Figure 23.

Step 3

Screw the stand anchor (*MLPN 50-50449*) onto the base assembly until it sits flush.

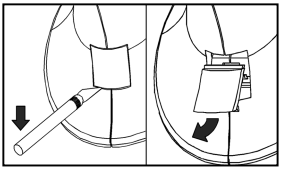


Figure 24.

Step 4

Remove the logo plate on the stand by gently using an *Exacto* knife to release the plate hook.

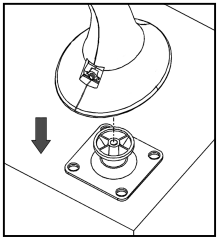


Figure 25.

Step 5

Position the stand over the base assembly.

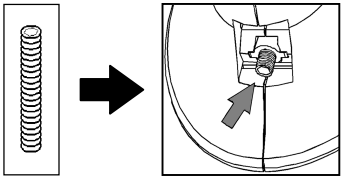


Figure 26.

Step 6

Secure the stand to the base assembly by installing and tightening the M3 set screw (*MLPN 18-18672*) under the logo plate as shown.

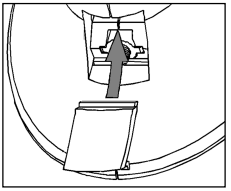


Figure 27.

Step 7

Snap the logo plate back into place.

Wall Mount, Option 1:

For Kit #46-46433 or
Kit #46-46508

Step 1:

Drill two #39 pilot holes 3.00” apart.

Step 2:

Attach the *Wall Mount Hanger* to the wall with the two #8 wood screws provided.

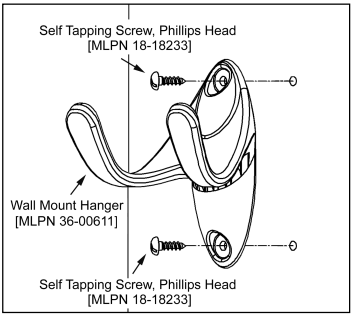


Figure 28.

Wall Mount, Option 2:

Kit #46-46508

Step 1:

Attach the Wall Mount Base to the Wall Mount Hanger with the two 4.8 x 13 mm self-tapping screws.

Step 2:

Remove <u>one</u> side of the protective backing from the double-sided adhesive tape.

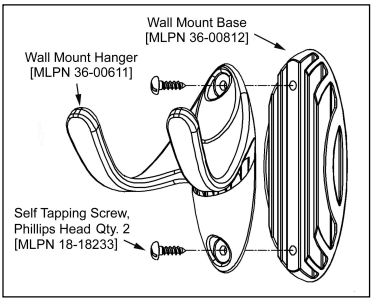


Figure 29.

Step 3:

Attach the tape to the back of the Wall Mount Hanger as shown.

Step 4:

Remove the protective backing from the double-sided adhesive tape and apply hook to the wall.

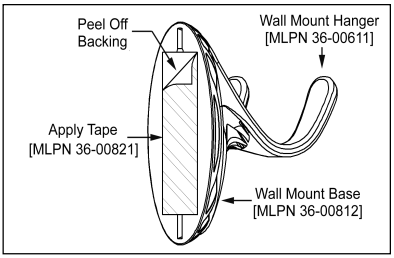


Figure 30.

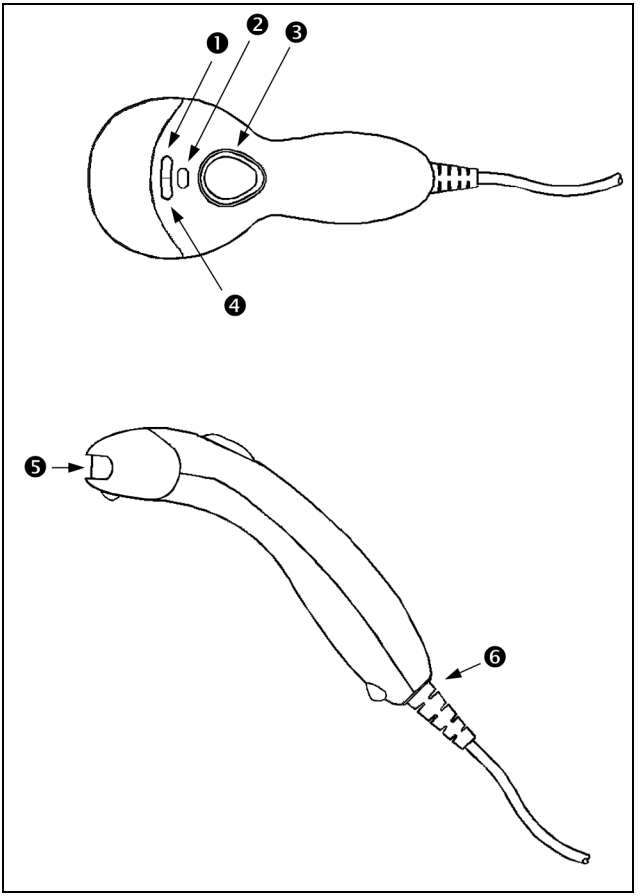


Figure 31.

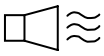
	Description	
1	White LED	
2	Yellow LED*	* This feature is not available on the MS9524
3	CodeGate Button*	* This feature is not available on the MS9524
4	Blue LED	
5	Output Window	Laser Aperture
6	Cable Connection	Detachable PowerLink Cable

AUDIBLE INDICATORS

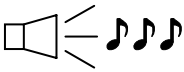
When the Voyager*PDF* is in operation, it provides audible feedback. These sounds indicate the status of the scanner**.** Eight settings are available for the tone of the beep (normal, 6 alternate tones and no tone). To change the tone, refer to Metrologic's programming guide, MLPN 00-02544 or MetroSet2's help files.

One Beep
When the scanner *first* receives power, the blue LED will turn on, then the white LED will flash and the scanner will beep once. The white LED will remain on for the duration of the beep. The scanner is ready to scan.

When the scanner *successfully* reads a bar code, the white LED will flash and the scanner beeps once (if configured to do so). If the scanner does not beep once and the white light does not flash, then the bar code has *not* been successfully read.



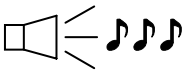
Razzberry Tone
This tone is a failure indicator. Refer to "Failure Modes" page 20.



Three Beeps - During Operation
When entering configuration mode, the white LED will flash while the scanner simultaneously beeps three times. The white and blue LEDs will continue to flash while in this mode. Upon exiting configuration mode, the scanner will beep three times, and the LEDs will stop flashing.

When configured, 3 beeps can also indicate a communications timeout during normal scanning mode.

When using one-code-configuration, the scanner will beep three times (the current selected tone), followed by a short pause then by a high tone and a low tone. This tells the user that the single configuration bar code has successfully configured the scanner.



Three Beeps - On Power Up
This is a failure indicator. Refer to "Failure Modes" on page 20.

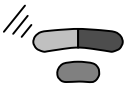
VISUAL INDICATORS

The MS9544 has three LED indicators (blue, white and yellow) located on the head of the scanner. The MS9524 has two LED indicators (blue and white) located on the head of the scanner. When the scanner is on, the flashing or stationary activity of the LEDs indicates the status of the current scan and the scanner.

Blue, White & Yellow (*MS9544's Only*) LEDs are off
The LEDs will not be illuminated if the scanner is not receiving power from the host or transformer.

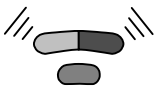
The scanner is stand-by mode, and CodeGate® is enabled. Present a bar code to the scanner and the blue LED will turn on when the laser turns on.

Steady Yellow (*MS9544's Only*)
The CodeGate button is not active. If a bar code is in the scan field, the laser will turn on. The bar code will be decoded and transmitted to the host automatically.



Steady Blue
When the laser is active, the blue LED is illuminated. The blue LED will remain illuminated until the laser is deactivated. (*Default Mode Only)*

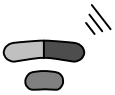
Steady Blue and Single White Flash
When the scanner successfully reads and transmits a bar code, the white LED will flash and the scanner will beep once. If the white LED does not flash or the scanner does not beep once, then the bar code has not been successfully read and/or transmitted.
(*Default Mode Only)*



Steady Blue and Steady White
After a successful scan, the scanner transmits the data to the host device. Some communication modes require that the host inform the scanner when data is ready to be received. If the host is not ready to accept the information, the scanner's white LED will remain on until the data can be transmitted.

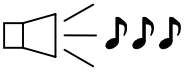
Alternating Flashing of Blue and White
This indicates the scanner is program mode. A razzberry tone indicates that an invalid bar code has been scanned while in this mode**.**

The scanner needs to have a Flash ROM upgrade if the alternating flashing of the white and blue LEDs occurs during startup and is accompanied by three beeps.



Steady White, Blue off
This indicates the scanner may be waiting for communication from the host.

One Razzberry Tone – On Power Up or During Scanning
This indicates the scanner has experienced motor or laser failure



Three Beeps – On Power Up
If the scanner beeps 3 times on power up then the non-volatile memory (NovRAM) that holds the scanner configuration has failed. If the scanner does not respond after reprogramming, return the scanner for repair to an authorized service center.

PROGRAMMING MODES

The MS9524/44 Voyager*PDF* Series has 3 modes of programming.

- **Bar Codes**
  Voyager*PDF* or Voyager*PDF* with CodeGate can be configured by scanning the bar codes located in Metrologic's programming guides, MLPN 00-02544 and MLPN 00-02990 or MetroSet2's help files. Please refer to these guides for instructions. These manuals can be downloaded for FREE from Metrologic's website (www.metrologic.com).

- **MetroSet*2***
  This user-friendly Windows-based configuration program allows you to simply 'point-and-click' at the desired scanner options. This program can be downloaded for FREE from Metrologic' website (www.metrologic.com), or set-up disks can be ordered by calling 1-800-ID-METRO.

- **Serial Programming**
  This mode of programming is ideal for OEM applications. This mode gives the end-user the ability to send a series of commands using the serial port of the host system. The commands are equivalent to the numerical values of the bar codes located in the MetroSelect Single-Line Programming Guide (MLPN 00-02544).

How does Serial Programming work?

1. Each command sent to the scanner is the ASCII representation of each numeral in the configuration bar code. The entire numeric string is framed with an ASCII [stx] and an ASCII [etx].

   EXAMPLE #1:
   Command for Disabling Codabar
   Command = [stx]100104[etx]
   String Sent to Scanner = 02h 31h 30h 30h 31h 30h 34h 03h
   (All values are hexadecimal).

2. If the command sent to the scanner is valid, the scanner will respond with an [ack].

3. If the command sent to the scanner in invalid, the scanner will respond with a [nak].

   NOTE: If this occurs, the end-user must start over at the very beginning of the configuration sequence. Simply re-transmitting the invalid command will not work. You must start over.

4. During programming, the motor and laser turn off. YOU CANNOT SCAN A BAR CODE WHILE IN SERIAL PROGRAM MODE.

5. There is a 20 second window between commands. If a 20-second timeout occurs, the scanner will send a [nak] and you must start over.

6. To enter serial program mode, send the following command [stx]999999[etx].

7. To exit serial program mode, send the following command [stx]999999[etx], the scanner will respond with an [ack] followed by 3 beeps.

8. This mode uses the current Baud Rate, Parity, Stop Bits and Data Bits settings that are configured in the scanner. The default settings of the scanner are 9600, Space, 2, 7 respectively. If a command is sent to the scanner to change any of these settings, the change will NOT take effect until after serial program mode is exited.

   EXAMPLE #2:

   The following example will set the scanner to the factory default settings, Disable Scanning of Code 128 bar codes, change the beeper tone, and add a "G" as a programmable prefix.

FEATURE	HOST COMMAND	ASCII REPRESENTATION	SCANNER RESPONSE
Enter Program Mode	[stx]999999[etx]	02h 39h 39h 39h 39h 39h 03h	[ack] or 06h
Load Defaults	[stx]999998[etx]	02h 39h 39h 39h 39h 38h 03h	[ack] or 06h
Disable Code 128	[stx]100113[etx]	02h 31h 30h 30h 31h 31h 33h 03h	[ack] or 06h
Alternate Tone 1	[stx]318565[etx]	02h 33h 31h 38h 35h 36h 35h 03h	[ack] or 06h
Prog. Prefix #1	[stx]903500[etx]	02h 39h 30h 33h 35h 30h 30h 03h	[ack] or 06h
Code Byte 0	[stx]0[etx]	02h 30h 03h	[ack] or 06h
Code Byte 7	[stx]7[etx]	02h 37h 03h	[ack] or 06h
Code Byte 1	[stx]1[etx]	02h 31h 03h	[ack] or 06h
Exit Program Mode	[stx]999999[etx]	02h 39h 39h 39h 39h 39h 03h	[ack] or 06h

   The scanner will beep three times!

   The commands sent to the scanner do not include the small superscripted '3' that you see in front of each bar code string in the MetroSelect manual. THE '3' SHOULD NOT BE SENT, IT IS A CODE TYPE DESIGNATION ONLY!

   As you will note for commands requiring additional bar codes to be scanned (such as prefixes, suffixes, timeouts, etc.), simply send the code bytes in the same order that you would normally scan the bar codes.

EXAMPLE #3:

The following example shows the events that occur when an invalid bar code is sent. This sample will load the factory default settings and then set the baud rate to 19200.

FEATURE	HOST COMMAND	ASCII REPRESENTATION	SCANNER RESPONSE
Enter Program Mode	[stx]999999[etx]	02h 39h 39h 39h 39h 39h 39h 03h	[ack] or 06h
Load Defaults	[stx]99999:[etx]	02h 39h 39h 39h 39h 39h 3Ah 03h	[nak] or 15h
Invalid command was sent, you must start over!			
Enter Program Mode	[stx]999999[etx]	02h 39h 39h 39h 39h 39h 39h 03h	[ack] or 06h
Load Defaults	[stx]999998[etx]	02h 39h 39h 39h 39h 39h 39h 03h	[ack] or 06h
19200 Baud Rate	[stx]415870[etx]	02h 34h 31h 35h 38h 37h 30h 03h	[ack] or 06h
Exit Program Mode	[stx]999999[etx]	02h 39h 39h 39h 39h 39h 39h 03h	[ack] or 06h
The scanner will beep three times!			

This example illustrates two important points.

First, if an invalid command is sent from the host, the scanner responds with a [nak] and the end-user must start over from the beginning.

Second, if a command is sent to change the Baud Rate, the new baud rate does not take effect until after the end-user exits program mode.

ABBREVIATED ASCII TABLE

Character	Hex Value	Decimal Value
[STX]	02h	2
[ETX]	03h	3
[ACK]	06h	6
[NAK]	15h	21
0	30h	48
1	31h	49
2	32h	50
3	33h	51
4	34h	52
5	35h	53
6	36h	54
7	37h	55
8	38h	56
9	39h	57

UPGRADING THE FLASH ROM FIRMWARE

The MetroSet2 program is a functional component of Metrologic's new line of Flash-based scanners. This program allows the user of a Metrologic scanner to quickly upgrade to a new or custom version of software. It requires the use of a personal computer running under Windows 95 or greater and the use of a communication port. The user merely connects the scanner to a communications port of the PC, launches the MetroSet2 program, and blasts off to new software upgrades.

Each MS9500, regardless of the version number or communication protocol, can be upgraded. In other words, all RS232 (-41), keyboard wedge (-47), light pen (-41), laser emulation (-00), OCIA (-9), IBM 468X/469X (-11), low speed HID USB (-38), low speed POS USB (-39) and full speed USB (-40) units can be upgraded. To upgrade all units, a power supply and PowerLink cable (MLPN 54-54012) are required.

The upgrades and custom software versions will be supplied by Metrologic in files called Motorola S-record files. These files contain all the information needed to upgrade the scanner. Simply add this file to the working directory or retrieve from its current location.

The program guides the user with its simplistic one click approach. The user must first select the file; once selected and verified, the file is ready to be used in the upgrade. Press the button to upgrade the scanner, the unit will go into a "flash mode" – both the blue and white LEDs will be on. The user can follow the progress of the upgrade by watching the screen for details. When the upgrade is complete, the scanner will respond with its normal one beep on power up. If the single beep does did occur, the scanner did not upgrade properly. Contact Metrologic for additional details.

MetroSet2 incorporates all functions that were previously in Meteor.

LABELS

Each scanner has a label on the back of the unit. This label has the model number, date of manufacture, serial number, CE and caution information. The following is an example of this label:

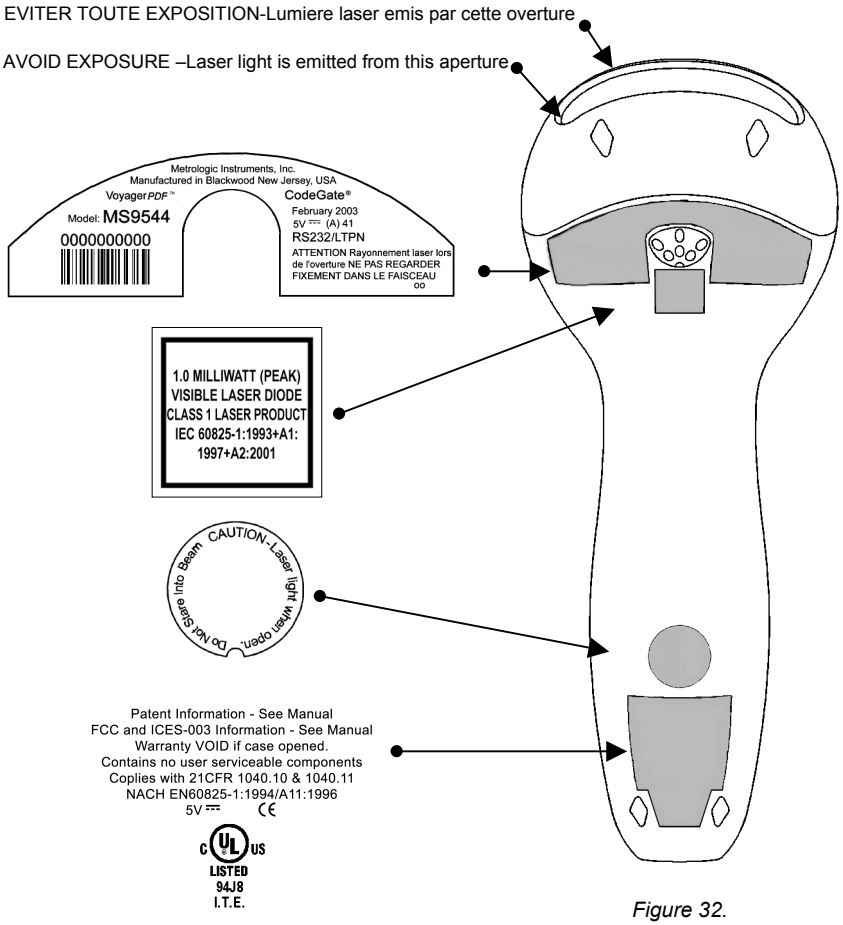


Figure 32.

MAINTENANCE

Smudges and dirt can interfere with the proper scanning of a bar code. Therefore, the output window will need occasional cleaning.

1. Spray glass cleaner onto lint free, non-abrasive cleaning cloth.
2. Gently wipe the scanner window.

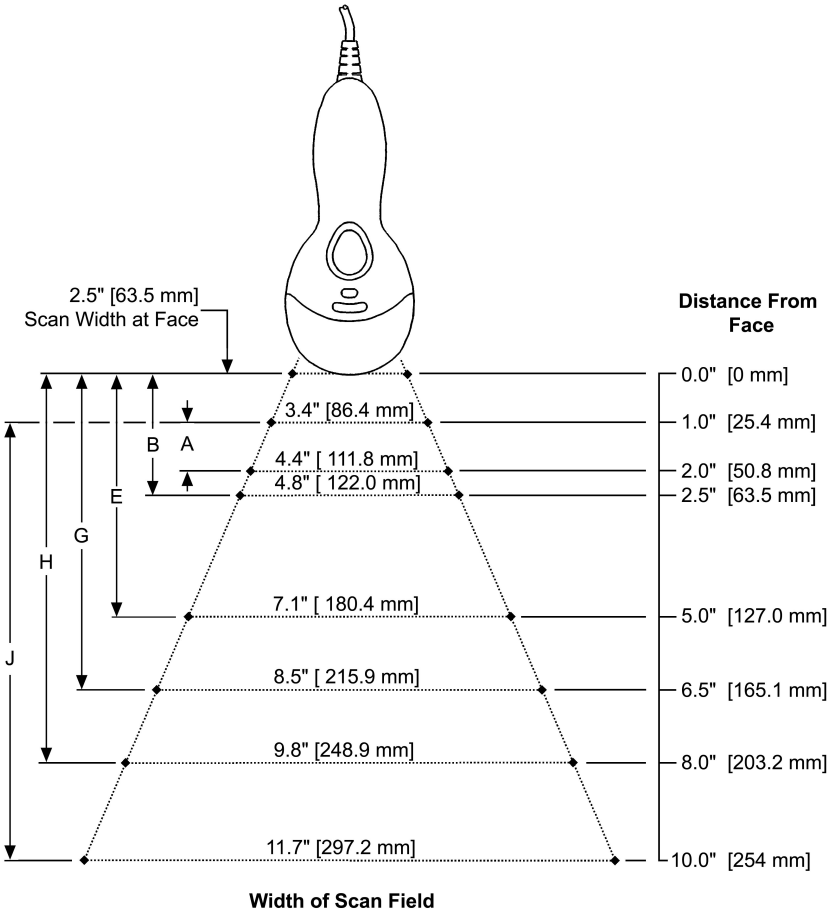


Figure 33.

Minimum Bar Code Element Width										
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**J**	**K**
mm	.13	.15	-	-	.19	-	.25	.33	.53	-
mils	5.2	5.7	-	-	7.5	-	10	13	21	-

Specifications subject to change without notice.

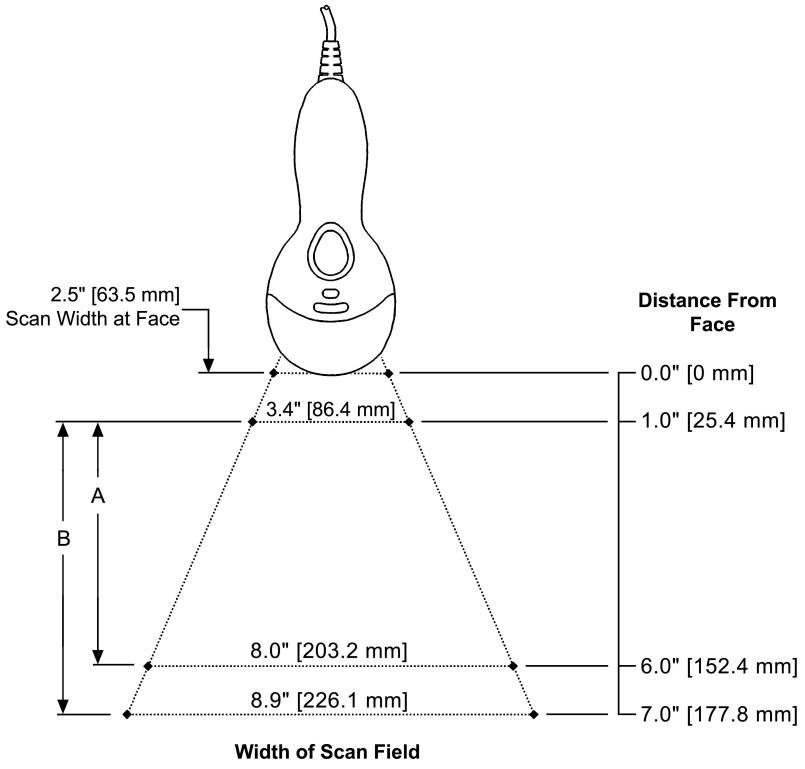


Figure 34.

PDF417 Minimum Bar Code Element Width		
	A	**B**
mm	.25	.38
mils	10	15

Specifications subject to change without notice.

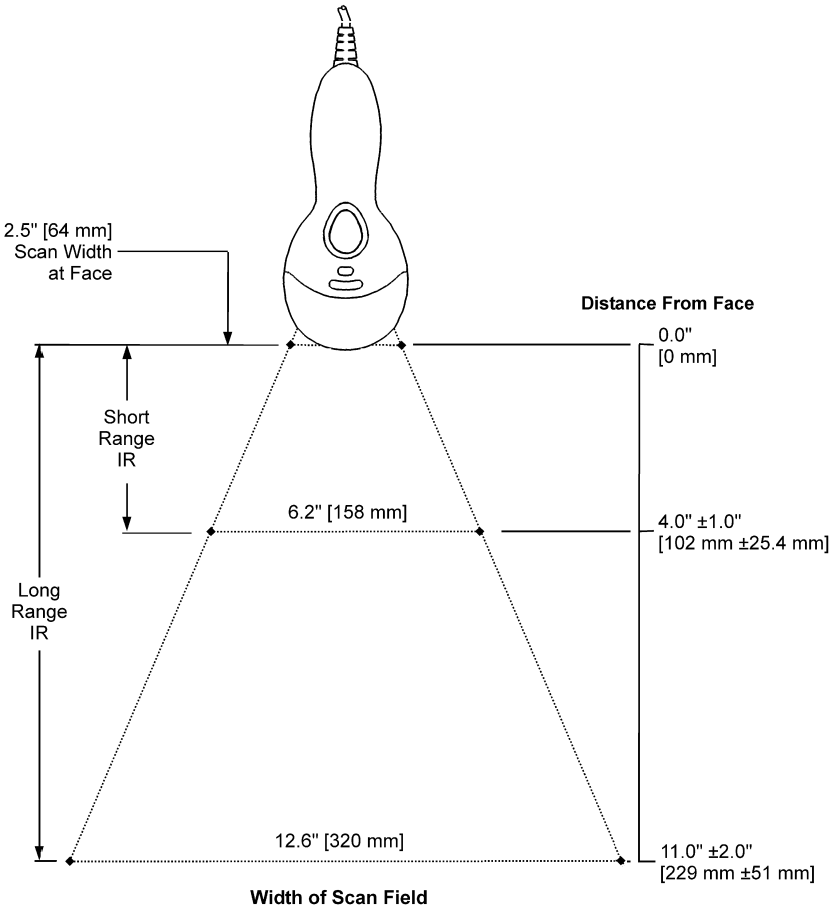


Figure 35.

Specifications subject to change without notice.

APPLICATIONS AND PROTOCOLS

The model number on each scanner includes the scanner number and factory default communications protocol.

Scanner	Version Identifier	Communication Protocol(s)
MS9524 MS9544	-9	OCIA* and RS-232 Transmit/Receive
	-00	Laser Emulation* and RS-232 Transmit/Receive*
	-11	IBM 468X/469X, RS232-TXD, RXD, RTS, CTS
	-14	RS232-TXD, RXD, RTS, CTS, DTR, DSR
	-38	Low Speed POS USB
	-39	Low Speed HID USB
	-40	Full Speed USB
	-41	RS-232/Light Pen Emulation*
	-47	Keyboard Wedge, Stand-Alone Keyboard and RS-232 Transmit/Receive

* PDF bar codes are transmitted as Code 39 for these interfaces. Acceptance on host side is dependent on the host's ability to handle large amounts of data.

The MS9524/44 Series Hand-Held Laser Scanner with built-in PC Keyboard Wedge Interface is designed for Keyboard emulation use only. Many RS-232 programmable functions available in other Metrologic scanners are also available as keyboard wedge functions.

The following are the most important selectable options specific to the keyboard wedge:

Keyboard Type

- **AT (includes IBM® PS2 models 50, 55, 60, 80)
- IBM PS2 (includes models 30, 70, 8556)

Keyboard Country Type

- **USA
- Belgium
- French
- German
- Italian
- Japanese
- Spanish
- Swiss
- United Kingdom

** Default setting. Refer to pages 37-41 for default settings. For information on how to change the default settings, refer to help files in MetroSet2 or the configuration guides provided with your scanner (MLPN 00-02544).

TROUBLESHOOTING GUIDE

The following guide is for reference purposes only. Contact a Metrologic representative at 1-800-ID-Metro or 1-800-436-3876 to preserve the limited warranty terms.

All Interfaces

MS9524/44 Series Troubleshooting Guide		
Symptoms	**Possible Causes**	**Solution**
No LEDs, beep or laser	No power is being supplied to the scanner.	Check transformer, outlet and power strip. Make sure the cable is plugged into the scanner.
No LEDs, beep, or laser	No power is being supplied to the scanner from host.	Some host systems cannot supply enough current to power Voyager*PDF*. A power supply may be needed.
3 beeps on power up	Non-volatile RAM failure	Contact a Metrologic service representative, if the unit will not hold the programmed configuration.
Razz tone on power up	RAM or ROM failure	Contact a Metrologic service representative, if the unit will not function.
Razz tone	VLD failure	Contact a Metrologic service representative.
Razz tone	There is a scanning mechanism failure.	Contact a Metrologic Service Representative.
The unit scans, communicates and beeps twice.	The same symbol timeout set too short.	Adjust same symbol timeout for a longer time.
The unit powers up, but does not scan/or beep.	The beeper is disabled and no tone is selected.	Enable the beeper and select a tone.

Symptoms	Possible Causes	Solution
The unit powers up, but does not scan and/or beep.	The bar code symbology trying to be scanned is not enabled.	UPC/EAN, Code 39, interleaved 2 of 5, Code 93, Code 128, Codabar and PDF are enabled by default. Verify that the type of bar code being read has been selected.
The unit powers up, but does not scan and/or beep.	The scanner has been programmed for a character length lock or a minimum length and the bar code being scanned does not satisfy the programmed criteria.	Verify that the bar code being scanned falls into the programmed criteria. *The scanner defaults to a minimum of 3 character bar code.*
The unit scans a bar code, but locks up after the first scan and the white LED stays on.	The scanner is configured to support some form of host handshaking, but is not receiving the signal.	If the scanner is setup to support ACK/NAK, RTS/CTS, XON/XOFF or D/E, verify that the host cable and host are supporting the handshaking properly.
The unit scans, but the data transmitted to the host is incorrect.	The scanner's data format does not match the host system requirements.	Verify that the scanner's data format matches that required by the host. Make sure that the scanner is connected to the proper host port.
The unit beeps at some bar codes and NOT for others of the same bar code symbology.	The print quality of the bar code is suspect.	Check print mode. The type of printer could be the problem. Change print settings (i.e. change to econo mode or high speed).
The unit beeps at some bar codes and NOT for others of the same bar code symbology.	The aspect ratio of the bar code is out of tolerance.	Check print mode. The type of printer could be the problem. Change print settings. i.e. change to econo mode or high speed.

Symptoms	Possible Causes	Solution
The unit beeps at some bar codes and NOT for others of the same bar code symbology.	The bar code may have been printed incorrectly.	Check if it is a check digit/character/or border problem.
The unit beeps at some bar codes and NOT for others of the same bar code symbology.	The scanner is not configured correctly for this type of bar code.	Check if check digits are set properly.
The unit beeps at some bar codes and NOT for others of the same bar code symbology.	The minimum symbol length setting does not work with the bar code.	Check if the correct minimum symbol length is set.
The unit scans the bar code but there is no data.	The configuration is not set correctly.	Make sure the scanner is configured for the appropriate mode.
The unit scans but the data is not correct.	The configuration is not set correctly.	Make sure that the proper PC type AT, or PS2 is selected. Verify correct country code and data formatting are selected. Adjust inter-character delay symptom.
The unit is transmitting each character twice.	The configuration is not set correctly.	Increase interscan code delay setting. Adjust whether the F0 break is transmitted. It may be necessary to try this in both settings.

Symptoms	Possible Causes	Solution
Alpha characters show as lower case.	The computer is in Caps Lock mode.	Enable Caps Lock detect setting of the scanner to detect if the PC is operating in Caps Lock.
Everything works except for a couple of characters.	These characters may not be supported by that country's key look up table.	Try operating the scanner in Alt mode.
The unit powers up OK and scans OK but does not communicate properly to the host.	The com port at the host is not working or not configured properly.	Check to make sure that the baud rate and parity of the scanner and the communication port match and the program is looking for "RS-232" data.
The unit powers up OK and scans OK but does not communicate properly to the host.	The cable is not connected to the correct com port.	Check to make sure that the cable is connected to the correct com port.
The host is receiving data but the data does not look correct.	The scanner and host may not be configured for the same interface parameters.	Check that the scanner and the host are configured for the same interface parameters.
Characters are being dropped.	Inter-character delay needs to be added to the transmitted output.	Add some inter-character delay to the transmitted output by using the Programming Guides MLPN 00-02544.

RS-232 DEMONSTRATION PROGRAM

If an RS-232 scanner is not communicating with your IBM compatible PC, key in the following BASIC program to test that the communication port and scanner are working.

This program is for demonstration purposes only. It is only intended to prove that cabling is correct, the com port is working, and the scanner is working. If the bar code data displays on the screen while using this program, it only demonstrates that the hardware interface and scanner are working. At this point, investigate whether the application software and the scanner configuration match.

If the application does not support RS-232 scanners, a software wedge program that will take RS-232 data and place it into a keyboard buffer may be needed. This program tells the PC to ignore RTS-CTS, Data Set Ready (DSR) and Data Carrier Detect (DCD) signals. If the demonstration program works and yours still does not, jumper RTS to CTS and Data Terminal Reading (DTR) to DCD and DSR on the back of your PC.

```
10      CLS
20      ON ERROR GOTO 100
30      OPEN “COM1:9600,S,7,1,CSO,DSO,CD0,LF” AS#1
35      PRINT “SCAN A FEW BAR CODES”
40      LINE INPUT #1, BARCODE$
50      PRINT BARCODE$
60      K$ = INKEY$: IF K$ = CHR$(27) THEN GOTO 32766
70      GOTO 40
100     PRINT “ERROR NO.”; ERR ;“PRESS ANY KEY TO TERMINATE.”
110     KK$ = INKEY$: IF K$ = “”THEN GOTO 110
32766   CLOSE: SYSTEM
32767   END
```

DESIGN SPECIFICATIONS

	DESIGN SPECIFICATIONS
OPERATIONAL	
Light Source:	Visible Laser Diode 650 nm
Laser Power:	Less than 1 mW (peak)
Depth of Scan Field:	0 mm – 200 mm (0” – 8”) for 0.330 mm (13 mil) bar code at default setting
Scan Speed:	180 ±10 scan lines per second
Scan Pattern:	Single scan line
Minimum Bar Width:	0.127 mm (5.0 mil)
Infrared Activation:	Long Range: 0 mm – 280 mm ± 50 mm (0” – 11” ± 2”) Short Range: 0 mm – 100 mm ± 25 mm (0” – 4” ± 1”)
Decode Capability:	Autodiscriminates all standard 1-D bar codes, RSS-14, PDF417 and truncated PDF417; for others symbologies call a Metrologic service representative
System Interfaces:	PC Keyboard Wedge, RS232, OCIA, Light Pen Emulation, Laser Emulation, IBM 468X/469X, Stand Alone Keyboard, USB (low speed and full speed)
Print Contrast:	30% minimum reflectance difference
Number Characters Read:	Up to 80 data characters on 1D; 1850 text characters for PDF417
Roll, Pitch, Yaw:	42°, 68°, 52°
Beeper Operation:	7 tones or no beep
Indicators (LED) *Default Settings*	Blue = laser on, ready to scan; White = good read; Yellow (MS9544 Only) = auto trigger mode active
MECHANICAL	
Length:	198 mm (7.8”)
Width:	Handle - 45 mm (1.8”), Head - 78 mm (3.1”)
Depth:	40 mm (1.6”)
Weight:	149 g (5.25 oz)
Termination:	10 pin modular RJ45
Cable:	Standard 2.7 m (9') coiled; optional 2.1 m (7') straight

Specifications subject to change without notice.

DESIGN SPECIFICATIONS

	DESIGN SPECIFICATIONS
ELECTRICAL	
Input Voltage:	5.0VDC ± 0.25V
Power:	Operating = 900 mW (typical) Standby = 325 mW (typical)
Current:	Operating = 250 mA @ 5VDC (typical) Standby = 100 mA @ 5VDC (typical)
DC Transformers:	Class 2; 5.2VDC @ 650 mA
Laser Class 1:	IEC 60825-1:1993+A1:1997+A2:2001 EN 60825-1:1994+A11:1996+A2:2001
EMC:	FCC, ICES-003 & EN55022 Class B
ENVIRONMENTAL	
Temperature:	Operating = 0°C to 40° (32° to 104°F) Storage = -40°C to 60°C (-40°F to 140°F)
Humidity:	5% to 95% relative humidity, non-condensing
Light Levels:	Immune to direct exposure of normal office and factory lighting conditions, as well as direct exposure to sunlight.
Shock:	Designed to withstand 1.5 m (5') drops
Contaminants:	Sealed to resist airborne particulate contaminants
Ventilation:	None required

Specifications subject to change without notice.

DEFAULT SETTINGS

Many functions of the scanner can be “programmed” – that is, enabled or disabled. The scanner is shipped from the factory programmed to a set of default conditions. The default parameter of the scanner has an asterisk (*) in the charts on the following pages. If an asterisk is not in the default column then the default setting is OFF or DISABLED. Every communication does not support every parameter. If the communication supports a parameter listed in the charts on the following pages, a check mark will appear.

PARAMETER	DEFAULT	OCIA	RS-232	LIGHT PEN	IBM 46XX	KBW	USB	LASER EMULATION
Normal Scan Mode	*	✓	✓	✓	✓	✓	✓	✓
Continuous Scan Mode		✓	✓	✓	✓	✓	✓	✓
Blinky Scan		✓	✓	✓	✓	✓	✓	✓
Continuous Blinky Scan		✓	✓	✓	✓	✓	✓	✓
Custom (one shot) Scan		✓	✓	✓	✓	✓	✓	✓
Long-Range In-Stand	*	✓	✓	✓	✓	✓	✓	✓
Short-Range In-Stand		✓	✓	✓	✓	✓	✓	✓
Long-Range Out-of-Stand	*	✓	✓	✓	✓	✓	✓	✓
Short-Range Out-of-Stand		✓	✓	✓	✓	✓	✓	✓
CodeGate Active In-Stand		✓	✓	✓	✓	✓	✓	✓
CodeGate Inactive In-Stand	*	✓	✓	✓	✓	✓	✓	✓
CodeGate Active Out-of Stand	*	✓	✓	✓	✓	✓	✓	✓
CodeGate Inactive Out-of Stand		✓	✓	✓	✓	✓	✓	✓
UPC/EAN	*	✓	✓	✓	✓	✓	✓	✓
Code 128	*	✓	✓	✓	✓	✓	✓	✓
Code 93	*	✓	✓	✓	✓	✓	✓	✓
Codabar	*	✓	✓	✓	✓	✓	✓	✓
Interleaved 2 of 5 (ITF)	*	✓	✓	✓	✓	✓	✓	✓
MOD 10 check on ITF		✓	✓	✓	✓	✓	✓	✓
Code 11		✓	✓	✓	✓	✓	✓	✓
Code 39	*	✓	✓	✓	✓	✓	✓	✓
Full ASCII Code 39		✓	✓	✓	✓	✓	✓	✓
PDF	*	✓	✓	✓	✓	✓	✓	✓
PDF CodeGate Active Out-of-Stand		✓	✓	✓	✓	✓	✓	✓

PARAMETER	DEFAULT	OCIA	RS-232	LIGHT PEN	IBM 46XX	KBW	USB	LASER EMULATION
PDF CodeGate Inactive Out-of-Stand	*	✓	✓	✓	✓	✓	✓	✓
PDF CodeGate Active In-Stand		✓	✓	✓	✓	✓	✓	✓
PDF CodeGate Inactive In-Stand	*	✓	✓	✓	✓	✓	✓	✓
Mod 43 Check on Code 39		✓	✓	✓	✓	✓	✓	✓
MSI-Plessy 10/10 Check Digit		✓	✓	✓	✓	✓	✓	✓
MSI-Plessy Mod 10 Check Digit	*	✓	✓	✓	✓	✓	✓	✓
Paraf Support ITF		✓	✓	✓	✓	✓	✓	✓
ITF Symbol Lengths	Variable	✓	✓	✓	✓	✓	✓	✓
Minimum Symbol Length	3	✓	✓	✓	✓	✓	✓	✓
Symbol Length Lock	None	✓	✓	✓	✓	✓	✓	✓
Bars High as Code 39	*			✓				✓
Spaces High as Code 39				✓				✓
Bars High as Scanned				✓				✓
Spaces High as Scanned				✓				✓
DTS/SIEMENS		✓						
DTS/NIXDORF	*	✓						
NCR F		✓						
NCR S		✓						
Poll light pen source				✓				✓
Beeper tone	Normal	✓	✓	✓	✓	✓	✓	✓
Beep/transmit sequence	Before transmit	✓	✓	✓	✓	✓	✓	✓
PDF Audible Processing Indicator - Enabled	*	✓	✓	✓	✓	✓	✓	✓
PDF Audible Processing Indicator - Disabled		✓	✓	✓	✓	✓	✓	✓
Communication timeout	None	✓	✓	✓	✓	✓	✓	✓
Razzberry tone on timeout		✓	✓	✓	✓	✓	✓	✓
Three beeps on timeout		✓	✓	✓	✓	✓	✓	✓

PARAMETER	DEFAULT	OCIA	RS-232	LIGHT PEN	IBM 46XX	KBW	USB	LASER EMULATION
Same symbol rescan timeout 250 msecs		✓	✓	✓	✓	✓	✓	✓
Same symbol rescan timeout 375 msecs		✓	✓	✓	✓	✓	✓	✓
Same symbol rescan timeout: 500 msecs)		✓	✓	✓	✓	✓	✓	✓
Same symbol rescan timeout 625 msecs		✓	✓	✓	✓	✓	✓	✓
Same symbol rescan timeout 750 msecs		✓	✓	✓	✓	✓	✓	✓
Same symbol rescan timeout 875 msecs	*	✓	✓	✓	✓	✓	✓	✓
Same symbol rescan timeout: 1000 msecs		✓	✓	✓	✓	✓	✓	✓
No Same symbol timeout		✓	✓	✓	✓	✓	✓	✓
Infinite Same symbol timeout		✓	✓	✓	✓	✓	✓	✓
Inter-character delay Program able in 1 msec steps (max 255 msecs)	1 msecs 10 msecs in KBW	✓	✓	✓	✓	✓	✓	✓
Number of scan buffers (*maximum*)	4	✓	✓	✓	✓	✓	✓	✓
Transmit UPC-A check digit	*	✓	✓	✓	✓	✓	✓	✓
Transmit UPC-E check digit		✓	✓	✓	✓	✓	✓	✓
Expand UPC-E		✓	✓	✓	✓	✓	✓	✓
Convert UPC-A to EAN-13		✓	✓	✓	✓	✓	✓	✓
Transmit lead zero on UPC-E		✓	✓	✓	✓	✓	✓	✓
Transmit UPC-A number system	*	✓	✓	✓	✓	✓	✓	✓
Transmit UPC-A Manufacturer ID#	*	✓	✓	✓	✓	✓	✓	✓
Transmit UPC –A Item ID#	*	✓	✓	✓	✓	✓	✓	✓
Transmit Codabar Start/Stop Characters		✓	✓		✓	✓	✓	
CLSI Editing (Enable)		✓	✓		✓	✓	✓	
Transmit Mod 43 Check digit on Code 39		✓	✓		✓	✓	✓	
Transit Mod 10/ITF		✓	✓		✓	✓	✓	
Transmit MSI-Plessy		✓	✓		✓	✓	✓	

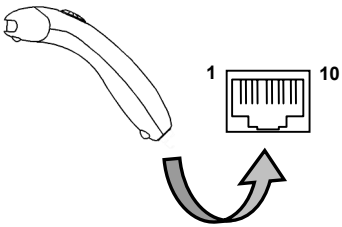
PARAMETER	DEFAULT	OCIA	RS-232	LIGHT PEN	IBM 46XX	KBW	USB	LASER EMULATION
Parity	Space		✓		✓		✓	
Baud Rate	9600		✓					
8 Data Bits			✓					
7 Data Bits	*		✓					
Stop Bits	2		✓					
Transmit Sanyo ID Characters			✓			✓		
Nixdorf ID			✓			✓		
LRC Enabled			✓			✓		
UPC Prefix			✓			✓		
UPC Suffix			✓			✓		
Carriage Return	*		✓			✓		
Line Feed-Disabled by default in KBW	*		✓			✓		
Tab Prefix			✓			✓		
Tab Suffix			✓			✓		
“DE” Disable Command			✓					
“FL” Laser			✓					
Enable Command			✓					
DTR Handshaking support			✓					
RTS/CTS Handshaking			✓					
Character	*		✓					
Message RTS/CTS			✓					
XON/XOFF Handshaking			✓					
ACK/NAK			✓					
Two Digit Supplements		✓	✓	as code 39	✓	✓	✓	as code 39
Five Digit Supplements		✓	✓	as code 39	✓	✓	✓	as code 39

PARAMETER	DEFAULT	OCIA	RS-232	LIGHT PEN	IBM 46XX	KBW	USB	LASER EMULATION
Bookland		✓	✓	as code 39	✓	✓	✓	as code 39
977 (2 digit) Supplemental Requirement		✓	✓	✓	✓	✓	✓	✓
Supplements are not Required	*	✓	✓	✓	✓	✓	✓	✓
Two Digit Redundancy	*	✓	✓	✓	✓	✓	✓	✓
Five digit Redundancy		✓	✓	✓	✓	✓	✓	✓
100 msec to Find Supplement Programmable in 100 msec steps (max 800 msec)	*	✓	✓	✓	✓	✓	✓	✓
Coupon Code 128		✓	✓	as code 39	✓	✓	✓	as code 39
† Programmable Code Lengths	7 avail	✓	✓	✓	✓	✓	✓	✓
† Code Selects with programmable Code Length Locks	3 avail	✓	✓	✓	✓	✓	✓	✓
Programmable Prefix characters	10 avail		✓			✓		
Suffix characters	10 avail		✓			✓		
Prefixes for Individual Code types			✓			✓		
Editing		✓	✓	✓	✓	✓	✓	✓
Inter Scan-Code delay programmable (100 µsec steps)	800 µsec					✓		
Function/control Key Support								
Minimum Element width Programmable in 5.6 µsec steps	1 msec			✓				✓

† These options are mutually exclusive. One can not be used in conjunction with the other.

Scanner Pinout Connections

The MS9524 and MS9544 scanner interfaces terminate to a 10-pin modular jack. The serial # label indicates the interface enabled when the scanner is shipped from the factory.



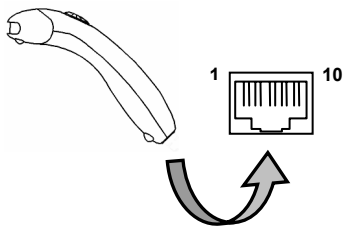
MS9524/44-41 RS-232C and Light Pen Emulation	
Pin	**Function**
1	Ground
2	RS-232 Transmit Output
3	RS-232 Receive Input
4	RTS Output
5	CTS Input
6	DTR Input/LTPN Source
7	Reserved
8	LTPN Data
9	+5VDC
10	Shield Ground

MS9524/44-47 Keyboard Wedge & Stand-Alone Keyboard	
Pin	**Function**
1	Ground
2	RS-232 Transmit Output
3	RS-232 Receive Input
4	PC Data
5	PC Clock
6	KB Clock
7	PC +5V
8	KB Data
9	+5VDC
10	Shield Ground

MS9524/44-11 IBM 468X/469X	
Pin	**Function**
1	Ground
2	RS-232 Transmit Output
3	RS-232 Receive Input
4	RTS Output
5	CTS Input
6	DTR Input
7	IBM B-Transmit
8	IBM A+ Receive
9	+5VDC
10	Shield Ground

Continued next page.

MS9524/44-9 OCIA	
Pin	**Function**
1	Ground
2	RS232 Transmit Output
3	RS232 Receive Input
4	RDATA
5	RDATA Return
6	Clock In
7	Clock Out
8	Clock in Return/Clock out Rtrn
9	+5VDC
10	Shield Ground



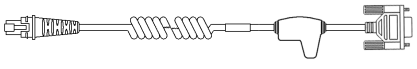
MS9524/44-00 Laser Emulation	
Pin	**Function**
1	Ground
2	RS232 Transmit Output
3	RS232 Receive Input
4	Flip Sense/Start of Scan Output
5	Proximity Detect/Trigger Emulation Output
6	Scan/Laser Enable Input
7	Reserved
8	Data Out
9	+5VDC
10	Shield Ground

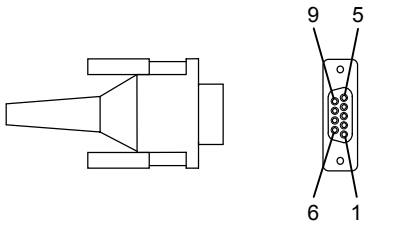
MS9524/44-14	
Pin	**Function**
1	Ground
2	RS-232 Transmit Output
3	RS-232 Receive Input
4	RTS Output
5	CTS Input
6	DTR Input
7	Reserved
8	DSR Out
9	+5VDC
10	Shield Ground

MS9524/44 Full Speed (-40) & Low Speed (-38, -39) USB	
Pin	**Function**
1	Ground
2	N/C
3	N/C
4	N/C
5	N/C
6	D+
7	PC +5V/V_USB
8	D-
9	N/C
10	Drain Wire

Cable Connector Configurations (Host End)

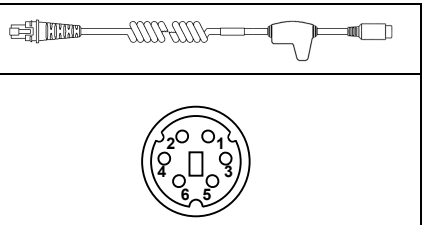
"Standard" PowerLink Cable 53-53xxx-3 *coiled* or 54-54xxx-3 *straight*	
Pin	**Function**
1	Shield Ground
2	RS-232 Transmit Output
3	RS-232 Receive Input
4	DTR Input/Light Pen Source
5	Power/Signal Ground
6	Light Pen Data *(DSR Out for -14 interfaces)*
7	CTS Input
8	RTS Output
9	+5VDC





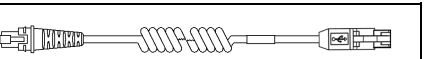
9-Pin D-Type Connector

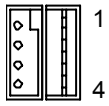
Stand Alone Keyboard PowerLink Cable *53-53020-3*	
Pin	**Function**
1	PC Data
2	NC
3	Power Ground
4	+5VDC PC Power to KB
5	PC Clock
6	NC



6-Pin Male Mini-DIN Connector

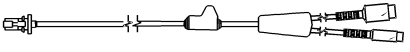
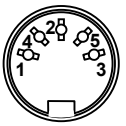
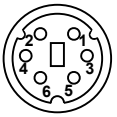
USB Power/Communication Cable *53-53213 or 53-530214*	
Pin	**Function**
1	PC +5V/V_USB
2	D-
3	D+
4	Ground
Shield	Shield



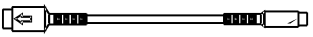
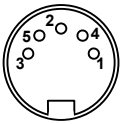
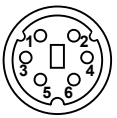


USB Type A Locking with Power

Cable Connector Configuration (Host End)

Keyboard Wedge PowerLink Cable *53-53002 or 54-54002*	
Pin	**Function**
1	Keyboard Clock
2	Keyboard Data
3	No Connect
4	Power Ground
5	+5 Volts DC
	 5-Pin DIN, Female
Pin	**Function**
1	PC Data
2	No Connect
3	Power Ground
4	+5 Volts DC
5	PC Clock
6	No Connect
	 6-Pin DIN, Male

Metrologic will supply an adapter cable with a 5-pin DIN male connector on one end and a 6-pin mini DIN female connector on the other. According to the termination required, connect the appropriate end of the adapter cable to the PowerLink cable, leaving the necessary termination exposed for connecting to the keyboard and the keyboard port on the PC.

Keyboard Wedge Adapter Cable	
Pin	**Function**
1	PC Clock
2	PC Data
3	No Connect
4	Power Ground
5	+5 Volts DC
	 5-Pin DIN, Male
Pin	**Function**
1	Keyboard Data
2	No Connect
3	Power Ground
4	+5 Volts DC
5	Keyboard Clock
6	No Connect
	 6-pin Mini DIN, Female

LIMITED WARRANTY

The MS9524/44 series scanners are manufactured by Metrologic at its Blackwood, New Jersey, USA facility. The MS9524/44 series scanners have a five (5) year limited warranty from the date of manufacture. Metrologic warrants and represents that all MS9524/44 series scanners are free of all defects in material, workmanship and design, and have been produced and labeled in compliance with all applicable US Federal, state and local laws, regulations and ordinances pertaining to their production and labeling.

This warranty is limited to repair, replacement of Product or refund of Product price at the sole discretion of Metrologic. Faulty equipment must be returned to the Metrologic facility in Blackwood, New Jersey, USA or Puchheim, Germany. To do this, contact Metrologic's Customer Service/Repair Department to obtain a Returned Material Authorization (RMA) number.

In the event that it is determined that the equipment failure is covered under the warranty, Metrologic shall, as its sole option, repair the Product or replace the Product with a functionally equivalent unit and return such repaired or replaced Product without charge for service or return freight, whether distributor, dealer/reseller, or retail consumer, or refund an amount equal to the original purchase price.

This limited warranty does not extend to any Product which, in the sole judgement of Metrologic, has been subjected to abuse, misuse, neglect improper installation, or accident, nor any damage due to use or misuse produced from integration of the Product into any mechanical, electrical or computer system. The warranty is void if the case of Product is opened by anyone other than Metrologic's repair department or authorized repair centers.

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Notices and Cautions

Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio TV technician for help

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice

This Class B digital apparatus complies with Canadian ICES-003.

Remarque

Cet appareil numerique de la class B est conforme à la norme NMB-003 du Canada.

⚠ Caution

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser light exposure. Under no circumstances should the customer attempt to service the laser scanner. Never attempt to look at the laser beam, even if the scanner appears to be nonfunctional. Never open the scanner in an attempt to look into the device. Doing so could result in hazardous laser light exposure. The use of optical instruments with the laser equipment will increase eye hazard.

⚠ Atención

La modificación de los procedimientos, o la utilización de controles o ajustes distintos de los especificados aquí, pueden provocar una luz de láser peligrosa. Bajo ninguna circunstancia el usuario deberá realizar el mantenimiento del láser del escáner. Ni intentar mirar al haz del láser incluso cuando este no esté operativo. Tampoco deberá abrir el escáner para examinar el aparato. El hacerlo puede conllevar una exposición peligrosa a la luz de láser. El uso de instrumentos ópticos con el equipo láser puede incrementar el riesgo para la vista.

⚠ Attention

L'emploi de commandes, réglages ou procédés autres que ceux décrits ici peut entraîner de graves irradiations. Le client ne doit en aucun cas essayer d'entretenir lui-même le scanner ou le laser. Ne regardez jamais directement le rayon laser, même si vous croyez que le scanner est inactif. N'ouvrez jamais le scanner pour regarder dans l'appareil. Ce faisant, vous vous exposez à une rayonnement laser qú êst hazardous. L'emploi d'appareils optiques avec cet équipement laser augmente le risque d'endommagement de la vision.

⚠ Achtung

Die Verwendung anderer als der hier beschriebenen Steuerungen, Einstellungen oder Verfahren kann eine gefährliche Laserstrahlung hervorrufen. Der Kunde sollte unter keinen Umständen versuchen, den Laser-Scanner selbst zu warten. Sehen Sie niemals in den Laserstrahl, selbst wenn Sie glauben, daß der Scanner nicht aktiv ist. Öffnen Sie niemals den Scanner, um in das Gerät hineinzusehen. Wenn Sie dies tun, können Sie sich einer gefährlichen Laserstrahlung aussetzen. Der Einsatz optischer Geräte mit dieser Laserausrüstung erhöht das Risiko einer Sehschädigung.

⚠ Attenzione

L'utilizzo di sistemi di controllo, di regolazioni o di procedimenti diversi da quelli descritti nel presente Manuale può provocare delle esposizioni a raggi laser rischiose. Il cliente non deve assolutamente tentare di riparare egli stesso lo scanner laser. Non guardate mai il raggio laser, anche se credete che lo scanner non sia attivo. Non aprite mai lo scanner per guardare dentro l'apparecchio. Facendolo potete esporVi ad una esposizione laser rischiosa. L'uso di apparecchi ottici, equipaggiati con raggi laser, aumenta il rischio di danni alla vista.

PATENTS

Patent Information

This METROLOGIC product may be covered by one or more of the following US Patents:

US Patent No. 5,260,553; 5,340,971; 5,340,973; 5,424,525; 5,468,951; 5,484,992; 5,525,789; 5,528,024; 5,591,953; 5,616,908; 5,627,359; 5,661,292; 5,777,315; 5,789,730; 5,789,731; 5,811,780; 5,825,012; 5,828,048; 5,883,375; 5,886,337; 5,895,907; 5,925,870; 5,925,871; 5,939,698; 6,029,894; 6,189,793; 6,209,789; 6,227,450; 6,283,375; 6,347,743; 6,412,700; 6347743; 6,412,700; 6,499,664; 6,575,369; 6,607,133; 6,637,655; 6,637,659; D408,532;

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Other worldwide patents pending.

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